Module 11:

Infant Nutrition

Table of Contents

Overview

Introduction

This module provides information about the nutrition and health status of infants.

Learning Objectives

After completing this module, the Community Nutrition Worker (CNW) will be able to:

- describe normal growth* and development of infants
- list factors that influence growth and development if infants
- identify that breastfeeding is the foundation of good infant feeding practices
- describe expected feeding skills for given ages
- recognize appropriate and inappropriate feeding practices
- describe common infant feeding problems and identify solutions to these problems
- describe guidelines for formula preparation
- list key recommendations for infant health care and safety
- identify indicators of nutritional need and specify conditions for an infant's WIC eligibility
- in a case study situation, assess an infant's growth pattern, biochemical, clinical and dietary status
- in a role-play situation, interview the caregiver of an infant, asses the infant's nutritional status, prioritize needs and provide individual education

Words that you may not know are **underlined. Definitions for these words can be found in the **Glossary** at the end of the module. (Note: Words are only underlined the first few times they appear in the text.)*

Growth & Development

Growth	Growth is an increase in the physical size of the body.
Development	Development is the process of learning new skills or maturing.
Stages	Infants go through several stages of development as they grow. These stages involve physical, mental, and social changes.
Chart	The chart on the next pages lists and describes the development for the infant's first 12 months. Every baby is different. Some babies develop slower and others faster than what the chart depicts.
Learning Activity 1	To learn more about the stages of infancy, you may want to try **Learning Activity 1** found at the end of this module.

Growth & Development (continued)

Stages of Infancy

Age	Description
1 month	• Locates mother's breast, latches onto the nipple, and sucks to nurse and/or sucks from a bottle • Begins to trust parent/caregiver • Responds to voices
2 months	• Lifts head slightly • Gurgles, coos, and squeals • Cries to communicate
3 months	• Holds head up to look • Rolls from back position to side • Begins to laugh
4 months	• Lifts head up • Rolls from front position to side • Sits with support • Reaches for objects • Eats soft solid foods from a spoon
5 months	• Turns head freely • Rolls over from front position to back • Wiggles on floor • Reaches for and grasps objects • Babbles and tries to mimic sounds • Turns head toward speaker

Growth & Development (continued)

Stages of Infancy (continued

Age	Description
6-9 months	• Rolls over both ways • Sits unsupported • Begins to crawl • Stands if supported by furniture or person • Uses palm of hand to pick up objects • Drinks from a cup • Gets first teeth • Begins to feed self • Experiments with sounds • Responds to name
9-12 months	• Crawls • Climbs on furniture • Walks with help • Uses fingers and thumb to pick up objects • Explores by touching • Feeds self • Begins to use spoon • Begins to understand phrases • Says simple words • Understands “no”
Factors that Influence Growth & Development	An infant’s growth and development are affected by: • genetics, • environment, • behavior, and • disease. The chart on the next page describes how these factors affect growth and development.

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Growth & Development (continued)

Factors that Influence Growth & Development

Genetics (Inherited Characteristics)
An infant's genes directly influence her/his:

- body type,
- height, and
- some health conditions and diseases.

For example, an infant of short stature may be short since her/his parents are short.

Environment (the "outside world")
Environmental factors include:

- nutrition,
- housing and sanitation,
- health care, and
- care given by parents(s) or caregiver(s).

If these are not adequate, the infant may not grow normally.

For example, a breastfed infant usually develops into a healthy toddler. However, an infant that is fed formula made from water containing lead may have some developmental problems.

Behavior
Behaviors of the pregnant woman can affect the infant's growth and development.

For example, heavy smoking and drug use can reduce fetal growth and the infant's birth weight.

Disease
Diseases may affect growth and development.

For example, persistent asthma may affect the nutritional status of the infant.

Feeding the Infant

Infant Feeding

Infant feeding is an extremely important part of an infant's growth and development. Due to rapid growth, an infant needs more calories and nutrients for her/his size than at any other time in her/his life.

Breastfeeding - The Foundation of Good Feeding Practices

The American Academy of Pediatrics (AAP) considers breastfeeding the foundation of good feeding practices. Breast milk is the intended food for a baby. For this reason and many others, WIC promotes and supports breastfeeding.

Reflexes Affect Feeding

Early feeding skills are greatly affected by an infant's reflexes.

A reflex is an automatic response, usually a movement, that occurs when a part of the body is touched or stimulated.

Parents and caregivers should be aware of the infant's natural reflexes and use these to guide feeding practices.

Five Reflexes

There are several reflexes that affect movement of the infant's mouth and affect feeding. These are:

- rooting reflex,
- tongue thrust reflex,
- suck-swallow pattern,
- gag reflex, and
- bite reflex.

Chart of Reflexes

The chart on the next page describes the five reflexes in more detail.

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Feeding the Infant (continued)

Descriptions of Infant Reflexes

Rooting Reflex is the movement that occurs when the infant is touched on the cheek, lips, or side of the mouth. The infant moves her/his head in the direction of the touch and opens her/his mouth. (Rooting may also occur when the mother's nipple is directly in front of the infant's mouth.)

- Occurs in an infant from birth to 3 months
- Helps infant nurse by allowing her/him to seek out and grasp a nipple
- Makes it difficult to feed the infant from a spoon or cup
- Is NOT present for about 2 hours after eating or when the infant is urinating

Tongue Thrust Reflex is the movement in which the tongue pushes forward when the lips are touched.

- Occurs in an infant from birth to 4 months
- Helps infant nurse
- Makes it difficult to feed the infant from a spoon or cup

Suck-Swallow Pattern is the movement that occurs when the tongue and lower lip are touched.

- Occurs in an infant from first few days of life to several months
- Allows the infant to swallow and breathe at the same time
- Gives an infant a strong forceful suck when nursing
- Makes it difficult to feed the infant from a spoon or cup

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Feeding the Infant (continued)

Descriptions of Infant Reflexes

Gag Reflex is the movement that occurs when the back half of the tongue or back of the roof of the mouth is touched.

- Occurs from birth to death
- Weakens in an infant at 6 months
- Protects the infant from choking
- Makes it difficult for the young infant to feed from a spoon or to eat foods that have a lot of texture

Bite Reflex is the up-and-down biting movement that occurs when the infant's gums are touched.

- Occurs in an infant from birth to 6 months
- Helps with nursing
- Makes it difficult for the infant to feed from a spoon
- Makes it difficult for the infant to drink from a cup

Infant Feeding Skills	Infant feeding skills vary from baby to baby. A baby may develop a skill before or after the age mentioned.
Feeding Charts	The 3 charts that follow on the next pages list: • the age(s) at which feeding skills usually develop, • age(s) at which certain foods may be introduced into the infant's diet, and • appropriate and inappropriate feeding practices. Use these charts as guidelines for parents and caregivers.

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Feeding the Infant (continued)

Expected Feeding Skills for Given Ages

<table>
<tr><th colspan="3">Feeding Stage</th><th>Age</th><th>Feeding Skills: Infant can…</th></tr>
<tr><td rowspan="8">Milk Feeding (0-6 months)</td><td></td><td></td><td>Birth – 4 months</td><td>• Locate mother’s breast
• Latch onto nipple
• Suck and swallow liquid
• Push tongue out to help the flow of liquids from breast or bottle</td></tr>
<tr><td rowspan="7">Transition to Solid Foods (4-12 months)</td><td></td><td>4 – 6 months</td><td>• Sit with support
• Hold head steady
• Keep food in mouth and swallow it</td></tr>
<tr><td></td><td>5 – 7 months</td><td>• Sit without support
• Begin to chew</td></tr>
<tr><td></td><td>6 months</td><td>• Use a cup with help</td></tr>
<tr><td></td><td>7 – 8 months</td><td>• Grasp and hold things</td></tr>
<tr><td rowspan="3">Table Foods & Self-Feeding (8-12 months)</td><td>8 – 10 months</td><td>• Take a bite of food
• Pick up finger foods
• Use a cup</td></tr>
<tr><td>10 – 12 months</td><td>• Chew and swallow soft, mashed, chopped foods
• Use a cup
• Start to use a spoon</td></tr>
<tr><td>1 year</td><td>• Chew and swallow soft table foods
• Use a spoon</td></tr>
</table>

Feeding the Infant (continued)

Introduction of Food by Age

Age	Food
Birth – 4 months	• Breast milk is preferred • If not breastfed, infant formula with iron
4 – 6 months	• Solid food such as cereal (first plain rice baby cereal, then oatmeal or barley baby cereal) ***WIC provides juice and cereal at 6 months of age.**
5 – 7 months	• Water from a small cup • Smooth, strained, or pureed **cooked** vegetables and fruits (begin with vegetables first) • **Do not add salt or sugar!**
7 months	• Fruit juice • Limit juice to 2 oz (1/4 C) per day • Mix 2 oz of juice with 2 oz of water • **Always give juice in a cup.** • **No orange or pineapple juice yet!**
7 – 8 months	• Strained or pureed chicken, beans or meat –**No hot dogs!** • Cottage cheese • Plain yogurt • Cooked egg yolk mashed with breast milk, formula, or yogurt –**No egg whites!** • Mashed tofu Offer a variety of foods. Let baby begin to feed self.

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Feeding the Infant (continued)

Introduction of Food by Age

Age	Food
8 – 10 months	• Mixed grain baby cereal • Fruits and cooked vegetables, mashed with a fork • Cooked plain rice and noodles, mashed or chopped • Finger foods such as: ➢ small pieces of mild cheese ➢ small pieces of soft, cooked vegetables ➢ small pieces of soft peeled fruit ➢ small pieces of cooked, ground meat, chicken or fish (take out all bones and tough parts) ➢ toasted bread squares, unsalted crackers or small pieces of soft tortilla ➢ small pieces of tofu **Do not add salt, sugar, fat or spices to baby's food.** Let baby feed self. Keep giving the baby new fruits and vegetables, so s/he will like different foods. As the baby eats more solid food, he or she will drink less breast milk or formula.

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Feeding the Infant (continued)

Introduction of Food by Age

Age	Food
10 – 12 months	• Small pieces of cooked or soft foods that the family eats • Cereal, bread and crackers • Fruits and cooked vegetables • Cooked egg yolks, soft meats, beans and lentils • Pasta (such as noodles) and rice Let baby feed self with a spoon or hands. Let baby sit at the table with the family. If using a bottle, use it less and use a cup more. Give the baby a small cup of breast milk, formula or water to drink with the meal. Wean the baby from the bottle, little by little, around 12 months.
One year	• Whole cow's milk a little at a time. When the baby gets accustomed to whole cow's milk, offer 4 oz in a cup, 4 times a day until age 2. (Babies fed non-fat milk before age 2 may drink more milk to get enough calories. This may lead to lifelong habits of overeating.) • Cooked whole egg Offer the baby 3 small meals a day plus nutritious snacks. Serve the baby liquids from a cup only (to wean baby from bottle).

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Feeding the Infant (continued)

Appropriate & Inappropriate Feeding

Appropriate	Inappropriate
Always hold the baby when feeding. Always watch your baby when s/he is eating solid foods and drinking from a bottle/cup.	Leaving the baby alone with a bottle/cup or feeding solid foods. Propping up the bottle.
Give the baby only breast milk or iron-fortified formula till s/he is about 4-6 months of age.	During the first year, giving the baby: • cow's milk, • goat's milk, • raw milk, • evaporated, or • sweetened condensed milk. (This may cause allergies, intestinal irritation, bleeding, or anemia.)
Use bottles only for formula, breast milk or water.	Using bottles for cereal and pureed food. (This does not improve baby's sleep and may even cause digestive problems and choking.)
Give the baby a bottle at feeding times only.	Putting the baby to bed or to nap with a bottle.
If necessary, only allow the child to fall asleep with a bottle containing plain water.	Allowing baby to fall asleep with a bottle containing cereal, fruit drinks, soda or sugar water.

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Feeding the Infant (continued)

Appropriate & Inappropriate Feeding (continued)

Appropriate	Inappropriate
Introduce foods, such as cereals, at about 4-6 months when the baby: • can sit with support, • has good head, neck, and tongue control, • can keep food in mouth, • can show when s/he is full, and • can show likes and dislikes.	Allowing the baby to eat solid foods **before** 4 months of age. Babies cannon digest carbohydrates until about 4 months of age (early feeding of solids may cause allergies, choking, diarrhea, or constipation; reduce the baby's intake of breast milk or formula; and/or stress the baby's kidneys.)
Introduce solids that are mashed or of a consistency that can be easily eaten.	Giving any solid foods that are hard or in big chunks, such as nuts, whole grapes or hot dogs. These could cause choking.
Feed the baby until s/he is full and/or has had enough to eat. The baby will show this by: • stopping eating, • turning her/his head, • pressing her/his lips together, • crying when food is offered, or • spitting food out.	Do NOT force a baby to eat when s/he is full or has had enough. This may lead to obesity.
Begin teaching the baby to drink from a cup at about 6 months of age.	Not teaching the baby to drink from a cup until s/he is about 1 year old.

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Feeding the Infant (continued)

Appropriate & Inappropriate Feeding (continued)

Appropriate	Inappropriate
Offer fruit juice in a cup only.	Offering fruit drinks, soda and sugar water in bottles and cups.
Replace bottle feedings with cup feedings at about 9 to 10 months.	Not offering a cup to get the baby ready for weaning.

Infant Feeding Problems

Infant Feeding Problems	There are several common infant feeding problems. Be familiar with them so that you can assist parents/caregivers in identifying solutions.
Chart of Feeding Problems & Solutions	The chart on the next pages lists some common infant feeding problems and possible solutions.

Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions

Problem	Solution(s)
Allergies (sensitivities to certain substances) may result in: • a rash, • breathing problems, • diarrhea, • vomiting, or • death.	• Breastfeed. • Use iron-fortified formula if not breastfeeding. • Delay solids until at least the 6th month. • Introduce 1 food at a time (every 3-5 days) in small amounts. • Avoid allergenic foods (such as egg whites, peanuts and peanut butter).
Baby Bottle Tooth Decay may result in: • pain, • inflamed gums, • poor food intake.	• Clean baby's gums and/or teeth daily. (Do NOT use toothpaste until child is about 3 years old.) • Start baby on cup between 6-7 months of age. • If needed, put water in bottle at bedtime. • Do NOT: ➢ allow baby to suck on a bottle continuously during the day, ➢ put baby to bed or nap with a bottle, ➢ have baby suck a pacifier dipped in sugar, honey or syrup, or ➢ give sweetened drinks.

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Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
Choking	• Cut hot dogs and meat sticks into long strips. • Cut round foods, such as grapes and cherries, in half and remove seeds. • Remove bones from meats. • Cook hard fruits and vegetables. • Have baby sit while eating. • **ALWAYS** watch baby while s/he eats. • Do NOT: ➢ give hard foods such as raw carrots, nuts, popcorn and hard candy, ➢ give sticky foods such as peanut butter or soft bread, ➢ give foods such as marshmallows (they can swell in the throat), or ➢ feed cereal in a bottle.

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Infant Feeding Problems (continued)

Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
Colic (extreme discomfort in the digestive tract)	***Take the baby to the doctor*** *to make sure baby does not have another problem.* • If formula feeding, make sure formula is prepared correctly (see can of formula for preparation instructions). • Keep a normal feeding schedule. • Gently flex the baby's knees to chest to stimulate digestion. • Comfort baby.
Constipation (less often than usual or difficult bowel movements due to hard stools) may be due to: • incorrect formula preparation, • overfeeding, • early introduction of solid foods, • lower intake of water, or • lack of movement/ activity.	• Breastfeed on demand. • If formula feeding, ➢ follow formula preparation instructions, ➢ offer appropriate amounts of formula, ➢ do NOT overfeed, and ➢ do NOT switch to low-iron formula. • Cut back on solid foods if baby is under 6 months old. • Give water (2-4 fluid oz between feedings) or diluted prune juice. • Allow baby to be active (such as crawling).

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Common Infant Feeding Problems & Solutions (continued)

Problem	Solution(s)
Diarrhea (large volume and more frequent than usual loose or watery stools) may be due to: • infection, • rapid or overfeeding of formula, • not enough water in formula, • early introduction of solid foods, • excess sugar in diet, • an allergy, • fatigue, or • antibiotic use.	***See doctor or Registered Dietitian immediately.*** • Continue to feed baby. • Give plenty of water.
Overfeeding	• Feed baby only when s/he is hungry. • When baby cries, first check to see what is bothering her/him. Do NOT automatically feed the baby. • Do not force baby to finish all the milk in a bottle or food in a dish. • Do not use food to reward, bribe, or comfort the baby. • Allow baby to be active (such as crawling).

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Common Infant Feeding Problems & Solutions (continued)

Poor Intake may result in: • low weight, • poor growth, or • infection.	***See doctor or Registered Dietitian.*** • Follow infant feeding recommendations.
Spitting Up may be due to: • too much food in stomach, • too much air in stomach, • bottle nipples with enlarged holes, or • improper positioning of baby.	• Stop feeding when baby seems full. • Use bottle nipples that are in good condition. • Hold baby at a 30° angle when feeding. • Burp baby every few minutes when breastfeeding or every couple of ounces when formula feeding. • Do not move baby a lot during or after a feeding.

Formula Feeding

Breastfeed Whenever Possible

Babies should be breastfed whenever possible. (The American Academy of Pediatrics (AAP) considers breastfeeding the foundation of good feeding practices.)

See *Module C: Breastfeeding Promotion & Support.*

Formula

If the baby is not breastfed, s/he should be given commercially prepared iron-fortified infant formula.

Infant formula is a specially made mixture of nutrients, usually in a powder or liquid form, given to infants when breastfeeding is not done.

Types of Formula

There are three types of infant formula, described in the chart below.

Type	Description
Milk-based	Made from cow's milk
Soy-based	Made from soybean protein
Special Therapeutic	• Made to be easily digested • Made for infants with medical conditions such as digestive problems

Formula Feeding (continued)

Importance of Correct Formula Preparation	Infant formula should always be prepared correctly. If the formula is too dilute (too much water added), the baby may not get the nutrients and/or calories s/he needs. If the formula is too concentrated (not enough water added), the baby's kidneys may be damaged and/or the baby may become dehydrated.
Formula Storage	Infant formula should also be properly stored. Proper storage prevents the growth of germs and prevents possible infections in the baby.
How to Prepare and Store Formula	The guidelines on the next pages describe how to prepare and store formula.

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Formula Feeding (continued)

Formula Preparation

*When preparing formula, use a **sterile** bottle, nipple and formula scoop.*

Ready-to-Feed Formula:

- Clean the top of the can and can opener.
- Shake the can well.
- Open the can and pour the amount of formula needed for that feeding into a clean bottle.
- Do **NOT** add water.

Concentrated Formula:

- Clean the top of the can and can opener.
- Shake the can well.
- Open the can and pour the contents into a clean plastic or glass container.
- Refill the formula can with water, pour it into the container with the formula, and stir well. (One can of water to one can of formula is the correct ratio.)

Powdered Formula:

- Use scoop that comes with the can.
- Mix 1 scoop of powder with 2 fluid ounces of cold water.
- Shake well to break up any lumps.
- Prepare only 1 bottle at a time and use it immediately.

Warming Up Formula: If the baby likes warmed milk, swirl the bottle in a pan or bowl of warm water.

- Do NOT warm milk in a microwave. (Microwaves do not heat evenly. Babies' mouths and throats have been burned by "hot spots" inside a bottle when the outside of the bottle felt cool.)
- Do NOT warm milk by putting the bottle under HOT running tap water.

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Formula Feeding (continued)

Formula Storage

When storing formula:

- Store prepared formula in a clean, covered container in the refrigerator.
- Store prepared formula in refrigerator for only 48 hours or less.
- After formula has been warmed and the infant fed, throw out any formula remaining in the bottle.
- Do NOT carry bottles of formula around all day unless they are properly cooled.
- Do NOT allow an older infant to carry a bottle of formula around throughout the day.

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Formula Feeding (continued)

Bottle Feeding

Formula is usually given to the infant in a bottle. Bottle feeding should imitate breastfeeding as much as possible. When the baby is bottle fed, s/he should:

- be cradled and the bottle held so that the nipple is constantly filled with formula, not air;
- be allowed to decide when s/he has eaten enough;
- NOT be forced to finish a bottle;
- NOT be put to bed or to nap with a bottle; and/or
- NOT have the bottle propped up so the baby feeds her/himself.

Feeding Frequency & Amounts

The frequency and amount of formula that a newborn infant takes will vary with each baby. As the baby grows older, the amount per feeding will increase and the number of feedings will decrease.

The list below shows what a parent or caretaker **may** expect for a **newborn** infant. Larger infants may need more formula.

Frequency

- 4 fluid oz/4 hours OR
- 3 fluid oz/3 hours

Number of Feedings

- 5 to 8 feedings/24 hours

Amount

- 24 fluid oz/24 hours

Weaning from the Bottle

Definition	Weaning is the process of reducing and finally discontinuing bottle feeding by replacing bottle feeding of formula or milk with a cup and other types of eating and sources of food.
Recommendation	A child should be totally weaned from a bottle by **18 months of age. It is a considered a nutritional risk if a baby is still taking a bottle >12 months of age.**
How to Wean	When weaning a baby from the bottle, a parent or caregiver may want to follow the suggestions listed on the next page. Be patient! Weaning an infant from the bottle usually takes time.
Learning Activity 2	To learn more about infant nutrition issues, including weaning, you may want to try **Learning Activity 2** found at the end of this module.

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Weaning from the Bottle (continued)

Steps to Take When Weaning

Step	Description
1	Replace the feeding that the infant is least interested in.
2	After several days or weeks, replace another feeding.
3	Repeat until all bottle feedings have been eliminated.
4	To eliminate the bottle feeding at nap or bedtime (this is usually the most difficult one to stop), try: • interesting the baby in something other than the bottle, such as a stuffed toy or blanket, • giving a lot of attention and affection, • offering a small snack or beverage from a cup before bedtime, and • giving a bottle with a small amount of water before bedtime if needed.

Infant Health Care & Safety

Infant Health Care & Safety	All parents and caregivers want their infants to be healthy and safe. The chart on the following pages describes some key recommendations for infant health care and safety.

Infant Health Care & Safety (continued)

Recommendations for Infant Health Care & Safety

Cleanliness/Sanitation:

- Wash hands with hot water and soap before preparing stored breast milk or formula.
- Sterilize bottles by washing them in an automatic dishwasher or boiling water.
- Store clean bottles upside down or covered in a clean place.

Health:

- Breastfeed the baby whenever possible.
- Feed a non-breastfed baby commercially prepared iron-fortified formula.
- To help prevent Sudden Infant Death Syndrome (SIDS), put the baby on her/his **back** when putting her/him to bed or a nap.
- Give solid foods only when the baby is ready (usually at 4-6 months).
- Begin teaching the baby how to use a cup at 6-7 months.
- Immunize the baby to protect against diseases (such as measles, mumps, polio and whooping cough).
- To prevent lead poisoning, keep the baby away from areas contaminated by gasoline, auto fumes, lead-based paint, or other sources of lead.

After meals, gently wipe out the baby's mouth and massage the gums with a soft damp cloth. As soon as the baby's teeth appear, clean them with a soft damp cloth or small, soft toothbrush. (Do NOT use toothpaste until the child is able to spit out.)

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Recommendations for Infant Health Care & Safety (continued)

Safety:

- Always check the temperature of food before feeding to prevent burning the baby's mouth.
- Do NOT feed food that needs to be refrigerated to the infant if it has been out of refrigeration for 2 hours or more.
- After bottle feeding, throw out leftover breast milk or formula.
- Do NOT warm baby bottles in a microwave.
- Do NOT feed foods that can cause choking (such as foods that are hard, sticky, contain bones, or may swell in the throat).
- Do NOT feed honey or foods containing honey, (Honey may contain spores that cause botulism.)
- Buckle the baby into a properly installed infant car seat every time the baby rides in a car.
- Keep hazardous items (such as medicines, household cleaners, cords from window blinds, and sharp items) out of the baby's reach.
- To prevent drowning, NEVER leave an infant near water (including open toilet bowls, buckets of water, and swimming pools).
- Do NOT:
  - hang anything around the baby's neck (such as pacifier holders), or
  - allow the baby to play with ropes, dog leashes, and/or other strangulation hazards.
- Call the Poison Control Center or 9-1-1 if the infant takes in a poisonous substance or has a life-threatening accident/emergency.

Indicators of Nutritional Need

Charts of Indicators of Nutritional Need

The 4 charts on the next pages list and describe the anthropometric, biochemical, clinical, and dietary indicators of nutritional need that make infants eligible for WIC, with their corresponding risk codes and levels of nutrition priorities. (Please see the Risk Code Manual for further descriptions of nutritional risks).

Learning Activity 3, 4, and 5

To learn more about how to provide nutrition education to a parent/caregiver of an infant, you may want to try **Learning Activity 3, Learning Activity 4,** and **Learning Activity 5** found at the end of this module.

Anthropometric Indicators

Indicator	Description	Risk Code	Priority
Underweight	Less than or equal to the 10th percentile weight for length/ height (based on CDC growth charts)	103	1
Overweight	Greater than or equal to the 90th percentile weight for length/ height (based on CDC growth charts)	113	1
Short Stature	Less than or equal 10th percentile height for age (based on CDC growth charts)	121	1
Low Birth Weight	Less than or equal to 5 pounds 8 oz (or 2,500 g) for infants and children less than 24 months of age	141	1
Premature Infant	Less than or equal to 37 weeks gestation	142	1

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Indicators of Nutritional Need (continued)

Anthropometric Indicators (continued)

Indicator	Description	Risk Code	Priority
Large for Gestational Age (LGA)	• Greater than or equal to 90th percentile weight for gestational age (based on intrauterine growth reference) OR • Birth weight greater than or equal to 9 pounds (4,000 g)	153	1
Small for Gestational Age (SGA)	Less than 10th percentile weight for gestational age (based on intrauterine growth reference)	151	1

Biochemical Indicators

Indicator	Description	Risk Code	Priority
Anemia	See agency guidelines for anemia	201	1
Lead Poisoning	Blood lead level greater than or equal to 10 mcg/dl within past 12 months	211	1

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Indicators of Nutritional Need (continued)

Clinical Indicators

Indicator	Description	Risk Code	Priority
Infectious Diseases	Severe acute infections within past six months that affect nutritional status, such as encephalitis, hepatitis, pneumonia, meningitis, parasites, HIV, AIDS, tuberculosis, bronchiolitis (three episodes in six months)	352	1
Recent Major Surgery, Trauma or Burns	Recent burns, trauma or surgery that affect nutritional status	359	1
Dental Problems	Dental problems that impair the ability to ingest adequate quantity or quality of foods such as: • nursing or baby bottle caries OR • tooth loss	381	1
Other Medical Conditions	The current condition or treatment of the condition must be severe enough to affect nutritional status and includes: • Juvenile Rheumatoid Arthritis (JRA) • Lupus Erythematosus • Cardiorespiratory disease • Heart disease • Cystic Fibrosis • Persistent asthma (moderate or severe) requiring daily medication	360	1

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Fetal Alcohol Syndrome (FAS)	• FAS is based on the presence of retarded growth, a pattern of abnormalities and abnormalities of the central nervous system including mental retardation.	382	1
CNS Disorders	Central Nervous System Disorders that affect energy requirements and ability to feed self such as: • epilepsy • Cerebral Palsy • Neural tube defects such as Spina Bifida or myelomeningocele	348	1
Developmental, Sensory, or Motor Delays	Developmental, sensory, or motor delays that interfere with the ability to eat, chew or swallow food. May include: • mental retardation • birth injury • head trauma • minimal brain function • feeding problems due to developmental delays • brain damage	362	1

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Genetic & Congenital Disorders	Other genetic and congenital disorders that cause a physical or metabolic abnormality and affect nutritional status such as: • Down's Syndrome • Muscular Dystrophy • cleft lip or palate • Thalassemia Major • Sickle Cell Anemia	349	1
Gastrointestinal Disorders	Disease or condition that interferes with the intake or absorption of nutrients such as: • stomach or intestinal disorders • small bowel enterocolitis • malabsorption syndrome • liver disease • gallbladder disease • inflammatory bowel disease (Crohn's or ulcerative colitis) • pancreatitis	342	1
Cancer	Cancer where condition or treatment affects nutritional status	347	1
Hypertension	High blood pressure	345	1
Diabetes Mellitus	Diabetes Mellitus Type 1 or 2	343	1

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Renal Disease	Kidney disease, such as pyleonephritis or persistent proteinuria, but excluding urinary tract infections involving the bladder	346	1
Inborn Errors of Metabolism	Gene mutations or gene deletions that alter metabolism in the body such as: • Phenylketonuria (PKU) • Maple Syrup Urine Disease (MSUD) • Galactosemia • Homocystinuria • Tyrosinemia • Histidinemia • Urea Cycle Disorders • Glutaric Aciduria • Methylmalonic Acidemia, • Glycogen Storage Disease • Galactokinase Deficiency • Fructoaldolase Deficiency • Propionic Acidemia • Hypermethionemia	351	1
Food Allergies	Has adverse immune response or hypersensitivity to a food that causes immunologic reaction	353	1

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Homelessness	Infant lacks a fixed, regular nighttime residence; or has residence in a shelter, institution for temporary residence, residence of another individual used for temporary accommodation, or a place not designed or usually used for accommodating people	801	2
Recipient of Abuse	Within the past six months, has been at imminent risk of serious harm, death, serious physical or emotional harm or exploitation	901	1
Migrancy	Member of a family where, within the past 24 months, at least one individual has worked in agriculture on a seasonal basis and has a temporary home for this work	802	
Foster Care	Within the past six months, infant: • entered foster care OR • moved from one foster care home to another	903	

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Nutrient Deficiency Diseases	Diagnosis of nutritional deficiency or disease caused by insufficient dietary intake of nutrients. Diseases include, but not limited to: • Protein Energy Malnutrition (PEM) • Scurvy • Rickets • Beri Beri • Hypocalcemia • Osteomalacia • Vitamin K Deficiency • Pellagra • Cheilosis • Menkes Disease • Xerophthalmia	341	1
Pyloric Stenosis	Gastrointestinal obstruction with abnormal gastrointestinal function affecting nutritional status	350	1
Thyroid Disorders	Hypothyroid or hyperthyroid condition	344	1
Hypoglycemia	Low blood sugar level	356	1
Celiac Disease	Also known as: • Celiac Sprue • Gluten enteropathy • Non-tropical sprue	354	1

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Indicators of Nutritional Need (continued)

Clinical Indicators (continued)

Indicator	Description	Risk Code	Priority
Failure to Thrive	Infant is not thriving	134	1
Lactose Intolerance	Infant has insufficient production of the enzyme lactase, causing an inability to digest the milk sugar lactose	355	1
Woman or Infant/Child of Primary Caregiver of Limited Ability	Infant's primary caregiver has limited ability to make feeding decisions and/or prepare food. Includes the following individuals: • 17 years old and younger, • mentally disabled/delayed, • clinically depressed, • physically disabled to a degree that restricts or limits food preparation abilities, and • people currently abusing or having history of alcohol/drug abuse	902	
Infrequent Breastfeeding as the Sole Source of Nutrients	The fully breastfed infant (not consuming any solid foods) who is routinely taking: • < 8 feedings/24 hours if 2 months or younger OR • < 6 feedings/24 hours if 2 months or older	418	4

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Indicators of Nutritional Need (continued)

Dietary Indicators

Indicator	Description	Risk Code	Priority
Inappropriate Feeding Practices	Routinely: • feeding goat, sheep, imitation or substitute milk • not using a spoon for early solid foods • feeding solids in a bottle • using a syringe-action nipple feeder • feeding foods that put the infant at risk for choking • putting the infant on inappropriate, infrequent or highly restrictive feeding schedules • forcing infant to eat certain types or amounts of food • giving honey to the infant • infants not finger feeding by 7-9 months • late introduction of solids or failure to introduce solids after 7 months of age	411	4
Inappropriate Use of Nursing Bottles	Inappropriate use of baby bottles such as: • using bottles for liquids other than breast milk, formula or water • adding cereal or other solids to bottles • propping the bottle • allowing the infant to fall asleep at naps or bedtime with a bottle • older infants walking around with a bottle in their mouth • using the bottle as a pacifier	419	2

Indicators of Nutritional Need (continued)

Dietary Indicators (continued)

Indicator	Description	Risk Code	Priority
Early Introduction to Solids	Introducing solid foods into the infant's diet BEFORE 4 months of age	412	4
Vegan Diets	Consuming a diet of plant origin foods only	402	4
No Dependable Source of Iron for Infants at 6 Months of Age or Later	No routine age-appropriate source of iron after 6 months of age such as: • iron-fortified cereal • iron-fortified infant formula • oral iron supplement • meats	414	4
Improper Dilution of Formula	Routine over- or under-dilution of formula	415	4
Feeding Other Foods Low in Essential Nutrients	Routinely eating foods low in essential nutrients and high in calories	416	4
Lack Of Sanitation In Preparing & Handling of Bottles	Lack of sanitation in preparing and handling nursing bottles due to: • failure to properly handle prepared formula • feeding formula held at room temperature >2 hours or recommended by manufacturer • feeding prepared formula held in refrigerator >48 hours • refeeding formula from an earlier feeding • failure to practice proper techniques • no access to safe water supply, equipment, or facilities for cleaning	417	4

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Indicators of Nutritional Need (continued)

Dietary Indicators (continued)

Indicator	Description	Risk Code	Priority
Highly Restrictive Diets	Diets that are very low in calories, severely limit intake of important food sources of nutrients or otherwise involve high-risk eating patterns (see risk definition)	403	4
Breastfeeding Complications	A breastfed infant can have, but not limited to, the following problems: a. jaundice b. weak or ineffective suck c. difficulty latching onto mother's breast d. inadequate stooling (<6 wet diapers per day)	603	1
Feeding Cow's Milk During the 1st 12 Months	Feeding whole, low-fat, reduced fat, nonfat milk or recipes using any of these products as the primary source of milk before the infant's 1st birthday	413	4

Indicators of Nutritional Need (continued)

Other Indicators

Indicator	Description	Risk Code	Priority
Transfer	Transfer with current valid Verification of Certification (VOC) verified by phone call or electronic or paper documentation (ID folder) from another state or local agency	502	N/A
Breastfeeding Infant of woman At Risk	Breastfeeding infant of woman at nutritional risk	702	Must be the same priority as at-risk mother
Infant Up to 6 Months of Age Born to a WIC Mother or WIC-Eligible Mother	Infant (less than 6 months old) born to a woman who was on WIC or was WIC-eligible during her pregnancy	701	2

Summary

Growth & Development

An infant's growth and development are affected by:

- genetics,
- environment,
- behavior, and
- disease.

Feeding Skills

The ages for some key feeding skills are listed below.

Age (months)	Feeding Skill
0-4	Sucks and swallows liquids
4-6	Begins to eat solids foods
6	Begins to use a cup
8-12	Feeds self

Reflexes

Early feeding skills are greatly affected by five reflexes that affect movement of the infant's mouth. These are:

- rooting reflex,
- tongue thrust reflex,
- suck-swallow pattern,
- gag reflex, and
- bite reflex.

Infant Feeding Problems

Common infant feeding problems include:

- allergies,
- baby bottle tooth decay,
- choking,
- colic,
- constipation,
- diarrhea,
- overfeeding,
- poor intake, and
- spitting up.

continued on next page

Summary (continued)

Breast Is Best!	**A baby should be breastfed whenever possible.**
Formula	When breastfeeding is not possible, the parent/ caregiver should give the infant a commercially prepared iron-fortified infant formula. There are three types of infant formula. These are: • milk-based, • soy-based, and • special therapeutic. Infant formula should always be prepared correctly and stored safely.
Infant Health Care & Safety	Some key recommendations for infant safety and health care are: • Breastfeed whenever possible. • Put baby on back for naps and bedtime. • Immunize as recommended. • Keep all dangerous items out of infant's reach. • Clean baby's gums/teeth regularly.
Indicators of Nutritional Need	There are many indicators of nutritional need that make an infant eligible for WIC. These include anthropometric, biochemical, clinical, and dietary indicators.

Glossary

anthropometric indicator- An anthropometric indicator is information about a person's body measurements such as height, weight, and circumference of the head, waist, arms or legs.

biochemical indicator- A biochemical indicator is information about a person's blood or urine such as hemoglobin (Hgb), hematocrit (Hct), blood sugar, and blood lead levels.

bite reflex- The bite reflex is the up-and-down biting movement that occurs when the infant's gums are touched.

botulism- Infant botulism is an infectious disease that occurs when an infant eats the spores of the bacteria *clostridium botulinum* (such as the spores sometimes found in honey). Symptoms can include constipation, weakness, and in severe cases, paralysis and problems breathing.

case study- A case study is a description of a person or situation that is studied to decide on the best plan of action.

clinical indicator- A clinical indicator is information about a person's health history and present medical and living conditions.

development- Development is the process of learning new skills or maturing.

dietary indicator- A dietary indicator is information about a person's eating behaviors.

gag reflex- The gag reflex is the movement that occurs when the back half of the tongue or back of the roof of the mouth is touched.

genetics- Genetics is a person's inherited characteristics, such as eye/hair color, body build, and height.

growth- Growth is the increase in the physical size of the body.

hypothyroidism- Hypothyroidism is a condition in which a person's metabolic rate is below normal.

immunize- To immunize or vaccinate is to give a person a shot or pill to prevent infection from certain bacteria or viruses.

Glossary (continued)

infant formula- Infant formula is a specially made mixture of nutrients, usually in a powder or liquid form, given to infants when breastfeeding is not done.

reflex- A reflex is an automatic response, usually a movement that occurs when a part of the body is touched or stimulated.

role play- A role play is when 2 or more people act out a scene as though it was "real life." "Props" such as baby dolls or food models are not needed but may be helpful.

rooting reflex- The rooting reflex is the movement that occurs when the infant is touched on the side of the mouth or cheek. The infant moves her/his head in the direction of the touch and opens her/his mouth.

short stature- Short stature is height or length in a range that is below the 10^{th} percentile on the growth chart.

suck-swallow pattern- The suck-swallow pattern is the movement by an infant that occurs when the tongue and lower lip are touched.

Sudden Infant Death Syndrome (SIDS)- Sudden Infant Death Syndrome, sometimes called "crib death," is the unexpected, sudden death of an infant in which an autopsy does not show an explainable cause of death.

tongue thrust reflex- The tongue thrust reflex is the movement in which the tongue pushes forward when the lips are touched.

weaning from the bottle- Weaning from the bottle is the process of reducing, and finally discontinuing, bottle feeding by replacing bottle feeding of formula or milk with a cup and other types of eating and sources of food.

Progress Check

1. Name at least 3 factors that affect growth and development in an infant.

2. Match the age to the stage of feeding.

	Stage		**Age (months)**
____	Begins to use a cup	A	4 – 6
____	Nurses only from breast or bottle (no solid foods)	B	6 – 7
____	Weans off of bottle	C	12 – 18
____	Begins to eat solid foods	D	Birth – 4
____	Begins to use a spoon	E	10 - 12

3. Mark the following infant feeding practices as “A” for appropriate or “I” for inappropriate.

____ giving a bottle of diluted juice at bedtime

____ giving solid foods at 3 months of age

____ giving juice in a cup

____ giving only breast milk or iron-fortified formula for the first 4 months

____ giving goat’s milk during the first year

Progress Check (continued)

4. Match the infant feeding problem with a possible solution.

	Problem		**Solution**
____	Allergies	A	Do NOT put baby to bed with a bottle.
____	Choking	B	Introduce one food at a time in small amounts.
____	Constipation	C	Stop feeding when baby appears full.
____	Baby bottle tooth decay	D	Do not give hard foods or foods such as uncut grapes.
____	Spitting up	E	Offer diluted prune juice.

5. Mark the following as “TRUE or “FALSE.”

____ When preparing powdered formula, you do not need to measure out the amount of water.

____ Soy-based formula is made from soy protein.

____ Prepared formula should be used within 48 hours.

____ After the infant has been fed, formula remaining in the bottle can be saved for 3 days, if refrigerated.

____ The amount of formula a newborn infant will take will vary with each baby.

____ As the baby grows older, the amount of formula taken per feeding will increase and the number of feedings will decrease.

Progress Check (continued)

6. List 5 recommendations for an infant's health care and safety.

7. Identify the following indicators of nutritional need as "A" for anthropometric, "B" for biochemical, "C" for clinical, and "D" for dietary.

____ underweight

____ anemic

____ Diabetes Mellitus

____ Down's Syndrome

____ preterm birth

____ lead poisoning

____ early introduction to solid foods

____ difficulty latching onto breast

____ inappropriate feeding practices

____ born to WIC mother

Learning Activities

The following activities are included and are recommended for interactive learning:

- Learning Activity 1: Stages of Infancy
- Learning Activity 2: Discussion of Infant Nutrition Issues
- Learning Activity 3: Observations
- Learning Activity 4: Case Studies
- Learning Activity 5: Role Plays

Activity 1: Stages of Infancy

Learning Objectives

After completing this activity, the Community Nutrition Worker (CNW) will be able to:

- describe the normal growth and development stages of an infant.

Instructions

1. Make arrangements with your supervisor or mentor to observe several infants in the waiting room area of your WIC site.

2. Observe these infants.

3. Fill in the chart on the next page. Use your observations and pages 3-4 of this module to guide you. Make sure to write down things such as when the infant begins to:
    - sit up without support,
    - use a cup,
    - eat solid foods,
    - handle finger foods, and
    - use a spoon.

4. When you are finished, discuss your findings with your supervisor.

5. To assist you with your learning, you may also want to:
    - view a video such as *The Infant* or *The Older Baby by* Ellen Satter,
    - review the books *Child of Mine* or *How to Get Your Kid to Eat…But Not Too Much,* by Ellen Satter, and/or
    - look over any pamphlets on infants that your local agency has available.

Activity 1: Stages of Infancy

Age	Description
1 month	
2 months	
3 months	
4 months	
5 months	
6-9 months	
9-12 months	

Activity 2: Discussion of Infant Nutrition Issues

Learning Objectives

After completing this activity, the Community Nutrition Worker (CNW) will:

- be familiar with some of the infant nutrition issues in WIC.

Instructions

1. Have your supervisor or mentor arrange for you to spend about 1 hour with a WIC staff person (CNW or nutritionist)

2. Ask the staff person to discuss her/his experiences with **infant** nutrition issues at WIC.

3. Ask such questions as:

   - *What **infant** nutrition problems seem to be most common among the participants you see?*

   - *What are some common indicators of nutritional need for **infants**?*

   - *What are some difficulties you have had in assessing an **infant's** nutritional status?*

   - *What suggestions do you have that would help a new staff person be ready to address the needs of **infants**?*

4. Write down your notes on the next page.

5. When you are finished, discuss your findings with your supervisor.

Activity 2: Discussion of Infant Nutrition Issues

Notes:

What **infant** nutrition problems seem to be most common among the participants you see?

What are some common indicators of nutritional need for **infants**?

What are some difficulties you have had in assessing an **infant's** nutritional status?

What suggestions do you have that would help a new staff person be ready to address the needs of **infants**?

Activity 3: Observations

Learning Objectives

After completing this activity, the Community Nutrition Worker (CNW) will be able to explain how to:

- interview the parent/caregiver of an infant,
- assess an infant's nutritional status,
- prioritize needs, and
- provide individual education.

Instructions

1. Have your mentor or supervisor arrange for you to observe several individual nutrition education sessions with the parent/caregiver of an infant, such as an **infant certification assessment** or **infant mid-certification assessment.**

2. Observe the staff person as s/he:
   - assesses the infant's needs/problems,
   - prioritizes these needs/problems, and
   - provides individual education.

   (Make sure to observe how participants needing different levels of intervention (Levels 1-4) are handled in your agency.)

3. Write down your notes on the next page.

4. Discuss your observations with your mentor or supervisor.

Activity 3: Observations

Notes:

How were the infant's needs/problems assessed?

How were the infant's needs/problems prioritized?

How are Level 3 and 4 infants handled by your agency?

Activity 4: Case Studies

Learning Objectives

After completing this activity, the Community Nutrition Worker (CNW) will be able to:

- assess an infant's anthropometric, biochemical, clinical, and dietary status.

Instructions

1. Read each of the 5 case studies on the following pages.
2. Identify the infant's anthropometric, biochemical, clinical, and dietary status
3. Fill out the form following each case study.
4. Talk to your supervisor or mentor if you need help.
5. When you are finished, discuss your responses with your supervisor or mentor.

Activity 4: Case Studies

Case Study 1:

Ryan is 8 months old. The following information is available about him: (You will need to chart this on a growth chart - length for age and weight for length - see your supervisor to find out how to chart length and weight on a growth chart.)

- He was 8 pounds at birth.
- He is now 25 inches long.
- He now weighs 16 pounds.
- His hemoglobin is 10.6 g/dl. Check your clinic's normal range for hemoglobin.
- He is on iron-fortified formula and has not been offered any other foods.
- He has some tooth decay.

Assessment:

*What are his **anthropometric** risks?*

*What are his **biochemical** risks?*

*What are his **clinical** risks?*

*What are his **dietary** risks?*

Activity 4: Case Studies

Case Study 2:

Chelsea is 6 months old. The following information is available about her: (You will need to chart this on a growth chart - length for age and weight for length - see your supervisor to find out how to chart length and weight on a growth chart.)

- She was 5 pounds at birth.
- She is now 24 inches long.
- She now weighs 12 pounds, 8 ounces.
- Her hemoglobin is 12 g/dl. Check your clinic's normal range for hemoglobin.
- Her mother is breastfeeding her. (Her mother says she nurses about 3 to 4 times in 24 hours.)
- Her mother is also giving her some cow's milk in a bottle.

Assessment:

*What are her **anthropometric** risks?*

*What are her **biochemical** risks?*

*What are her **clinical** risks?*

*What are her **dietary** risks?*

Activity 4: Case Studies

Case Study 3:

Alexandra is 5 weeks old. The following information is available about her: (You will need to chart this on a growth chart - length for age and weight for length - see your supervisor to find out how to chart length and weight on a growth chart.)

- She was 4 pounds, 6 ounces at birth.
- She is now 22 inches long.
- She now weighs 4 pounds, 12 ounces.
- Her hemoglobin is 12 g/dl. Check your clinic's normal range for hemoglobin.
- Her mother is breastfeeding exclusively.

Assessment:

*What are her **anthropometric** risks?*

*What are her **biochemical** risks?*

*What are her **clinical** risks?*

*What are her **dietary** risks?*

Activity 4: Case Studies

Case Study 4:

Jesus is 11 months old. The following information is available about him: (You will need to chart this on a growth chart - length for age and weight for length - see your supervisor to find out how to chart length and weight on a growth chart.)

- He was 8 pounds, 1 ounce at birth.
- He is now 25 inches long.
- He now weighs 21 pounds.
- His hemoglobin is 13.2 g/dl. Check your clinic's normal range for hemoglobin.
- He has been eating solid foods since he turned 5 months.
- His mother says she gives him a bottle filled with a juice drink 2 or 3 times each day.

Assessment:

*What are his **anthropometric** risks?*

*What are his **biochemical** risks?*

*What are his **clinical** risks?*

*What are his **dietary** risks?*

Activity 4: Case Studies

Case Study 5:

Vladislav is 4 months old. The following information is available about him: (You will need to chart this on a growth chart - length for age and weight for length - see your supervisor to find out how to chart length and weight on a growth chart.)

- He was 7 pounds, 3 ounces at birth.
- He is now 26 inches long.
- He now weighs 15 pounds.
- His hemoglobin is 9.8 g/dl. Check your clinic's normal range for hemoglobin.
- He is being fed formula. (It is not clear if he regularly gets iron-fortified formula.)
- He has not yet started on solid foods.

Assessment:

*What are his **anthropometric** risks?*

*What are his **biochemical** risks?*

*What are his **clinical** risks?*

*What are his **dietary** risks?*

Activity 5: Role Plays

Learning Objectives

After completing this activity, the Community Nutrition Worker (CNW) will be able to:

- interview the parent/caregiver of an infant,
- assess an infant's nutritional status,
- prioritize the infant's needs, and
- provide individual education to the parent/ caregiver of an infant.

Background

A role play is a scenario in which 2 or more people act out a scene as though it was "real life." Props are not needed but may be helpful.

Instructions

1. Ask your mentor, supervisor, or a co-worker to role play any 3 to the 5 roles (A-E) described on the following page.

2. Using the information you have learned about infant nutrition, act out the role of a WIC CNW in a session with these 3 parents/caregivers.

3. Mentor/Supervisor/Co-worker: Using the role plays as your guide, act out the role of the participant. Try to be as realistic as possible.

4. After each session, ask your co-worker to tell you what s/he noticed. Make sure to ask for your strengths as well as weaknesses.

Activity 5: Role Plays

5 Participants

Role Play A	Donna Swift's daughter Taneisha is 6 months old. She weighs 13 pounds and is 26.5 inches long. She has a hemoglobin of 11 g/dl. She is being breastfed and has just started eating some solid foods.
Role Play B	Grace Chu's son David is 9 months old. David's weight is at the 8th percentile for length. He has a hemoglobin of 10.8 g/dl and a hematocrit of 34%. He is on iron-fortified formula only. He has not been offered any solid foods yet.
Role Play C	Sabrina Garcia's daughter Selena is 5 weeks old. Selena's weight is at the 45th percentile for length. She is on low iron infant formula.
Role Play D	Roberta Juarez's son Jaime is 2 months old. Jaime's weight is at the 50th percentile for length. He has a hemoglobin of 10.8 g/dl. Jaime is on iron-fortified formula. Sometimes he has problems sucking from a bottle. Roberta says he also has problems sleeping through the night and she is thinking about putting cereal in his nighttime bottle.
Role Play E	Tina Williams and her daughter Jasmyn live in a shelter for homeless families. Jasmyn is 9 months old. Her weight is at the 5th percentile for length. She has a hemoglobin of 12.6 g/dl. She is on iron-fortified formula. She does not yet drink from a cup. She does eat some solid foods.

Progress Check Answers

1. Name at least 3 factors that affect growth and development in an infant.
   Any 3 of the following responses are correct:
   - ***genetics,***
   - ***environment,***
   - ***behavior, and***
   - ***disease.***

2. Match the age to the stage of feeding.

Stage		**Age (months)**	
B	Begins to use a cup	A	4 – 6
D	Nurses only from breast or bottle (no solid foods)	B	6 – 7
C	Weans off of bottle	C	12 – 18
A	Begins to eat solid foods	D	Birth – 4
E	Begins to use a spoon	E	10 - 12

3. Mark the following infant feeding practices as “A” for appropriate or “I” for inappropriate.

   I giving a bottle of diluted juice at bedtime

   I giving solid foods at 3 months of age

   A giving juice in a cup

   A giving only breast milk or iron-fortified formula for the first 4 months

   I giving goat’s milk during the first year

Progress Check Answers (continued)

4. Match the infant feeding problem with a possible solution.

Problem		Solution	
B	Allergies	A	Do NOT put baby to bed with a bottle.
D	Choking	B	Introduce one food at a time in small amounts.
E	Constipation	C	Stop feeding when baby appears full.
A	Baby bottle tooth decay	D	Do not give hard foods or foods such as uncut grapes.
C	Spitting up	E	Offer diluted prune juice.

5. Mark the follow as “TRUE or “FALSE.”

FALSE When preparing powdered formula, you do not need to measure out the amount of water.

TRUE Soy-based formula is made from soy protein.

TRUE Prepared formula should be used within 48 hours.

FALSE After the infant has been fed, formula remaining in the bottle can be saved for 3 days, if refrigerated.

TRUE The amount of formula a newborn infant will take will vary with each baby.

TRUE As the baby grows older, the amount of formula taken per feeding will increase and the number of feedings will decrease.

Progress Check Answers (continued)

6. List 5 recommendations for an infant's health care and safety.

Any 5 of the following responses are correct:

- ***Wash hands with hot water and soap before preparing stored breast milk or formula.***
- ***Sterilize bottles by washing them in an automatic dishwasher or boiling water.***
- ***Store clean bottles upside down or covered in a clean place.***
- ***Breastfeed the baby whenever possible.***
- ***Feed non-breastfed baby commercially prepared iron-fortified formula.***
- ***To help prevent Sudden Infant Death Syndrome (SIDS), put the baby on her/his back when putting her/him to bed or a nap.***
- ***Give solid food only when the baby is ready (usually at 4-6 months).***
- ***Begin teaching the baby how to use a cup at 6-7 months.***
- ***Immunize the baby to protect against diseases (such as measles, mumps, polio and whooping cough).***
- ***To prevent lead poisoning, keep the baby away form areas contaminated by gasoline, auto fumes, lead-based paint, or other sources of lead.***
- ***After meals, gently wipe out the baby's mouth and massage the gums with a soft damp cloth. (As soon as the baby's teeth appear, clean them with a soft damp cloth or small, soft toothbrush.)***
- ***Always check the temperature of food before feeding to prevent burning the baby's mouth.***
- ***Do NOT feed food to the infant that needs to be refrigerated to the infant if it has been out of refrigeration for 2 hours or more.***

Progress Check Answers (continued)

6. (continued)
List 5 recommendations for an infant's health care and safety.

Any 5 of the following responses are correct:

- ***After a feeding, throw out leftover breast milk or formula.***
- ***Do NOT warm baby bottles in a microwave. (Microwaves often do heat evenly. Babies' mouths and throats have been burned by "hot spots" inside a bottle when the outside of the bottle has felt cool.)***
- ***Do NOT feed foods that can cause choking (such as foods that are hard, sticky, contain bones, or may swell in the throat).***
- ***Do NOT feed honey or foods containing honey.***
- ***Buckle the baby into a properly installed infant car seat every time the baby rides in a car.***
- ***Keep hazardous items (such as medicines, household cleaners, cords from window blinds, and sharp items) out of the baby's reach.***
- ***To prevent drowning, NEVER leave an infant near water (including open toilet bowls, buckets of water, and swimming pools).***
- ***Cover electrical outlets with appropriate covers.***
- ***Do NOT:***
  - ***hang anything around the baby's neck (such as a string that holds a pacifier), or***
  - ***allow the baby to play with ropes, dog leashes, and/or other strangulation hazards.***
- ***Call the Poison Control Center or 9-1-1 if the infant takes in a poisonous substance or has a life-threatening accident/ emergency.***

Progress Check Answers (continued)

7. Identify the following indicators of nutritional need as “A” for anthropometric, “B” for biochemical, “C” for clinical, and “D” for dietary.

   A underweight

   B anemic

   C Diabetes Mellitus

   C Down’s Syndrome

   A preterm birth

   B lead poisoning

   D early introduction to solid foods

   C difficulty latching onto breast

   D inappropriate feeding practices

   C born to WIC mother